$BaTiO_3$
Barium Titanate Crystal

BaTiO3 is a very unique crystal with superior photo-refractive and ferroelectric properties. MTI supplies both substrate grade and photo-refractive grade BaTiO3 single crystal with excellent quality and affordable price.

Typical Properties

Crystal Structure	Tetragonal (4m) : 9°C < T < 130.5 °C a=3.99 Å, c= 4.04 Å ,
Growth Method	Top Seeded Solution Growth
Melting Point	1600 °C
Density	6.02 g/cm^3
Dielectric constants	ε_a = 3700, ε_c = 135 (unclamped) ε_a = 2400, ε_c = 60 (clamped)
Index of Refraction	515 nm 633 nm 800 nm n_o 2.4921 2.4160 2.3681 n_e 2.4247 2.3630 2.3235
Transmission wavelength	0.45 ~ 6.30 μm
Electro Optic Coefficients:	r^T_{13} = 11.7 ±1.9 pm/V r^T_{33} =112 ±10 pm/V r^T_{42}= 1920 ±180 pm/V
Reflectivity of SPPC (at 0 deg. cut)	50 - 70 % (max. 77%) for λ = 515 nm 50 - 80 % (max: 86.8%) for λ = 633 nm
Two-wave mixing coupling constant:	10 -40 cm^{-1}
Absorption loss:	λ: 515 nm 633 nm 800 nm α: 3.392cm^{-1} 0.268cm^{-1} 0.005cm^{-1}
Standard BTO Crystal Products	
Refractive Grade BTO (Fully electric poled with single domain)	3x3x3 mm 2- 4 faces polished 5x5x5 mm, 2- 6 faces polished
Substrate grade BTO (poled, but with domains)	5x5x1.0 mm, <100> or <001> ori. 1- 2 sides polished 10x10x1.0 mm, <100> or <001>ori. 1-2 sides polished

- Special size components are available upon request.
- BTO crystal must be stored in temperature above 13 °C to avoid phase transition which will cause twin or domain inside crystal

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